

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION
FOREST SITE PREPARATION
(acre)
CODE 490

SCOPE

This document establishes the technical details, workmanship, and quality and extent of materials required to install the practice in accordance with the Conservation Practice Standard. The information shall be considered when preparing site-specific specifications for the practice.

The site-specific specifications for installing, operating, and maintaining the practice on a specific field or treatment unit shall be documented via the NRCS Hawaii Jobsheet for this practice and given to the client. Other documents such as practice worksheets, maps, drawings, and narrative statements in the conservation plan may be used to plan or design the practice and to prepare the site-specific specifications.

GENERAL

Utility companies should be contacted to determine possibility of disturbing any buried lines by planned earthmoving activities in areas previously not tilled.

FOREST SITE PREPARATION METHODS TO ENCOURAGE NATURAL REGENERATION OF WOODY PLANTS

Consult a professional forester for additional information or for a prescription on a site preparation method not described below.

Scarifying

Scarifying the land can be an effective site preparation technique on degraded pasture areas where viable seeds of desirable species may germinate – such as those of Acacia koa. This method may encourage the natural regeneration of seeds by exposing mineral soil. The land can be scarified by hand or machine where seedlings are desired. Areas scarified should only be large enough to encourage natural regeneration of desired species. Excessive scarification, which may lead to soil erosion and extensive weed invasion, should be avoided.

FOREST SITE PREPARATION METHODS TO PERMIT ARTIFICIAL ESTABLISHMENT OF WOOD PLANTS

Consult a professional forester for additional information or for a prescription on a site preparation method not described below.

Mechanical**Disking**

Harrowing, disking or plowing turns the soil, thereby removing competition. This method is used on areas that are cleared, sodded, or lightly covered with brush.

Generally, rough disking is adequate to prepare a site for forestry plantings. Clear dozer-width strips along contour for planting. Knock down all understory and leave desirable trees standing. If necessary, grub the area immediately around the planting hole.

If conditions make it necessary for total site preparation, remove all understory and all undesirable larger trees. Windrow the slash along the contour or across slope.

Ripping

Ripping or chiseling shatters and fractures rock and compacted or restrictive soil layers. It penetrates deeply to improve drainage, root penetration, and aeration in the soil. Subsoiling should follow planned row spacing. This method does not adequately prepare the seedbed for planting and the site should be reworked with a chisel or disk plow to break up the large pieces.

Chopping

Chopping is an effective method where vegetation is dense and the diameter of the stems is small (less than 4 inches). A rolling drum chopper will uproot, chop, and compact brush. This type of site preparation minimizes soil loss and may be used on soils with moderate to severe erosion hazard.

Shearing

Shearing is used to prepare sites where there are a large number of stems over 4 inches in diameter. If done properly, bulldozer shearing blades, which have a sharpened lower edge and are either angled or V-shaped, can shear trees at ground level with little soil disturbance. To minimize erosion and site deterioration, shearing should be limited to moderate slopes and stable soils.

Blading

Blading is the removal of trees and other vegetation with a straight-blade bulldozer. It should be used only when other methods are not available because it removes topsoil. If minimum site preparation is desired, vegetation may be pushed down and the site may either be direct seeded or planted by hand.

Where feasible, a brush rake should be used. A brush rake will filter soil through the rake teeth and minimize soil displacement.

Mowing

A tractor drawn rotary mower can be used to remove herbaceous and small, woody vegetation. This method is usually limited to abandoned pasture and cropland.

Lopping

Lopping uses hand tools or chain saws to fell residual stems. It is a good method of site preparation for steep slopes because it causes little soil disturbance. Lopping can be especially useful on sites too small for heavy equipment.

Chemical

Herbicides can be used to kill undesirable vegetation. It can be a safe, economical alternative to other methods of site preparation especially on steep slopes where erosion may be a problem. This type of treatment may be used in combination with other methods of site preparation.

Herbicides may be broadcast, applied in bands, or applied to individual stems by tree injection, stump treatment or basal spraying.

When using herbicides, the recommendations of the University of Hawaii, College of Tropical Agriculture and Human Resources and other qualified forestry specialists should be followed.

All chemicals will be used in accordance with label guidelines. Restricted-use chemicals can only be applied by a certified applicator or under the supervision of a certified applicator of the Hawaii Department of Agriculture.

Conformance with permits of all state and federal regulations for use of chemicals shall be the responsibility of the landuser. Chemical containers shall be disposed in a safe, approved manner. Refer to practice standards and specifications for **Brush Management** (314) or **Pest Management** (595).

Prescribed Burn

Prescribed burning may be used to remove flammable woody and herbaceous vegetation in order to obtain regeneration and facilitate planting. It controls competing vegetation and improves access and visibility. Burning can also encourage the germination of viable seeds. This method is often used in combination with other site preparation methods.

With proper planning, prescribed fires should not cause excessive erosion and sedimentation due to the combined effect of the removal of canopy species and the loss of soil-binding ability of the herbaceous vegetation roots.

Prescribed burning should only be done by trained personnel under carefully controlled conditions. If this technique is used, care should be taken to protect air quality, wetlands, remaining desirable trees, threatened and endangered species, cultural resources, and other property. Contact the Department of Health, Clean Air Branch for rules and permit requirements.

TIMING OF SITE PREPARATION ACTIVITIES

Site preparation activities should be completed prior to the start of the rainy season if possible - preferably before soils become saturated or too wet.

Planting or seeding operations should be carried out soon after site preparation activities have been completed or during the beginning of the fall rains. Additional information on the establishment and maintenance of desired species is available in the standards and specifications for **Tree/Shrub Establishment** (612) and **Forest Stand Improvement** (666).

WEED AND PEST CONTROL

Area must be treated to control and eliminate competition from undesirable plants until desirable woody vegetation is well established. Refer to practice standards for **Pest Management** (590) and **Brush Management** (314).

Protect desirable species from grazing by livestock or damage from feral animals and rodents. Refer to **Use Exclusion** (472) practice standard.

EROSION CONTROL

Avoid creating ruts up and down slopes. Windrows, disking, bedding, and planting should be on the contour or across the slope to minimize erosion unless it causes safety concerns. Avoid complete disking of steep slopes with extremely erodible soils.

Any structural erosion control measures should be installed while site is being prepared and before desirable woody vegetation is established.

If land is bare after site preparation, the establishment of temporary vegetative cover is recommended to minimize erosion until desirable woody vegetation is mature. Refer to practice standards for **Cover Crop** (340), **Critical Area Planting** (342), or **Mulching** (484).

AVOIDANCE OF SOIL COMPACTION

Operations to prepare the site for forest regeneration, planting or seeding should be carried out in dry weather whenever possible to avoid excessive soil compaction. Use of heavy equipment should be avoided when soils are saturated.

PROTECTION OF OTHER RESOURCES

Streamside Management Zones (SMZs) should be identified and maintained along streams and other waterbodies as a filter or buffer for forestry related outputs (e.g., sediment, logging debris). Refer to **Filter Strip** (393) or **Riparian Forest Buffer** (391) standards.

The planned treatment area should be surveyed and inventoried for cultural resources, wetlands, and T&E (threatened and endangered) species. Steps should be taken to avoid and/or protect these areas from degradation. Possible treatment measures may include **Fence** (382), **Use Exclusion** (472), **Upland Wildlife Habitat Management** (645), or **Wetland Wildlife Habitat Management** (644). Consult a Cultural Resource Specialist or a Biologist for additional information.

REMOVAL OF SLASH AND DEBRIS

Keep slash (logging debris) piles above 50-year flood plain of all waters. Minimize slash within 100 feet of public roads and 500 feet of structures to prevent forest fire hazards. Slash piles can also be pushed in piles along contours to form erosion barriers.

Prevent accumulation of debris in streams and other water bodies. Debris should not be pushed into Streamside Management Zones (SMZs) or water courses. Logging debris in streams should be removed immediately.

All trash associated with the logging operation should be promptly removed (not buried) and hauled to a legal disposal site, windrowed on the contour, or chipped and spread on-site. Refer to **Residue Management, Seasonal** (344).

REFERENCES

Larson, John E. February 1980. Revegetation Equipment Catalog. USDA Forest Service, Equipment Development Center, Missoula, Montana.

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State of Hawaii, Department of Land & Natural Resources, Division of Forestry and Wildlife. 1981. Prime Forest Lands Inventory.

Washington State Department of Natural Resources, Forest Practices Division. 1997. Forest Practices Illustrated.